

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



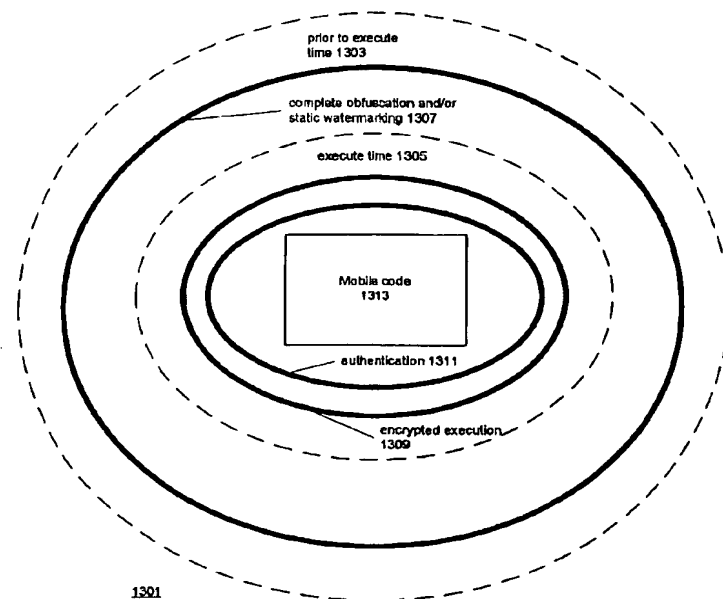
(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023313 A1

- (51) International Patent Classification⁷: **G06F 12/14** (US). ZHAO, Jian [CN/US]; 130 New Road, Rumford, RI 02916 (US).
- (21) International Application Number: PCT/US2003/027693 (74) Agent: NELSON, Gordon, E; 57 Central St., P.O. Box 782, Rowley, MA 01969 (US).
- (22) International Filing Date: 4 September 2003 (04.09.2003) (81) Designated State (national): US.
- (25) Filing Language: English (84) Designated States (regional): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).
- (26) Publication Language: English
- (30) Priority Data: 60/407,929 4 September 2002 (04.09.2002) US
Declaration under Rule 4.17:
— of inventorship (Rule 4.17(iv)) for US only
- (71) Applicant (for all designated States except US): FRAUNHOFER CRCG, INC. [US/US]; 321 S. Main St., Suite 2, Providence, RI 02093 (US).
Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (72) Inventors; and
(75) Inventors/Applicants (for US only): LUO, Chenghui [CN/US]; 32 Cedar Pont Drive, Apt. 7, Warwick, RI 02886
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROTECTING MOBILE CODE AGAINST MALICIOUS HOSTS CROSS REFERENCES TO RELATED APPLICATIONS



(57) Abstract: Techniques for using a class loader to protect mobile code against a malicious host. The techniques include using the class loader to extend a class used by the mobile code such that a method is added to the code which authenticates the mobile code. When executed, the method provides a dynamic watermark that authenticates the code. The method may be encrypted until it is added to the code. One such method uses a static watermark in the code to determine whether the code has been modified. The techniques also include using a class loader to extend the class such that obfuscated symbolic names in the program that correspond to symbolic names defined by the class can be resolved. A way of doing this is to include a first association between the obfuscated symbolic names and encrypted forms of the corresponding symbolic names in the program and to make a second association between the encrypted forms of the corresponding symbolic names and information used to resolve the symbolic names defined in the class. The loader then uses the first and second associations to

resolve the obfuscated names.